

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of:

Confirmation No.: 3143

Randall B. Metcalf

Group Art Unit: 2644

Serial No.: 08/749,766

Examiner: Daniel Swerdlow

Filed: November 20, 1996

Title: Sound System and Method for Capturing and Reproducing Sounds

ORIGINATING FROM A PLURALITY OF SOUND SOURCES

REPLY BRIEF

Mail Stop Appeal Brief-Patents The Assistant Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Dear Sir:

I. INTRODUCTION

This Reply Brief is being filed within two months of the Examiner's Answer dated October 29, 2004 (the "Answer").

A. The Status of the Claims

The Examiner's entry of the Amendment dated August 30, 2004 is noted with appreciation. Therefore, a correct copy of the claims appears at Appendix A of the Appeal Brief.

II. RESPONSE TO EXAMINER'S ARGUMENTS

A. General Comments

The Examiner's answer raises various new issues which are addressed below. In general, however, it is clear from the Examiner's comments and approach that a decision was made not to issue a patent and justification for that decision has been pieced together. This is clear legal error.

For example, the Examiner alleges that "Claim 1 recites several extremely broad limitations." Answer at p. 3. It is irrelevant to a proper legal analysis whether one or more claim elements by themselves are broad. The relevant legal question is whether the claimed invention as a whole is obvious over the prior art. Neither the simplicity nor breadth of individual claim elements precludes patentability if the invention as a whole was not known or suggested by the prior art.

The Examiner's Answer perpetuates the errors made during prosecution by hunting and pecking through the prior art to find individual claim elements without due consideration of the claimed invention as a whole. That so much of the Examiner's rejections are clear hindsight further establishes the true pioneering nature of the invention.

For example, in considering the invention as a whole, it is important to keep in mind that one aspect of the invention relates to separately capturing sounds from different sound sources. The significance of this, with respect to the invention as a whole, is that by doing so, and separately maintaining the corresponding audio signals on separate channels throughout the system, other significant aspects of the invention can be achieved. For example, each of the separate signals can be passed through amplifiers and speakers that are customized for the characteristics of the sounds produced by the original sound sources. This stands in stark contrast to the prior art that uses spatial separation. In such cases, each channel must handle the broad range of characteristics of the overall collection of sound sources. In effect, in such situations, customization is meaningless.

The applicant clearly identifies problems and limitations with spatial separation techniques in the background of the invention. Yet, the Examiner effectively ignores this

and relies on several references which, as admitted by the Examiner, relate to spatial separation. To be sure, spatial separation relies on separate channels as do embodiments of the claimed invention. However, a very significant difference, which the Examiner also largely ignores, is what is conveyed over those channels. With spatial separation systems, the signals are *mixed* signals (i.e. different spatial components of a mix of sounds from multiple sound sources). In contrast, in the invention, the signals correspond to signals from separate sound sources. In the case of mixed signals, as in the spatial separation systems, the sounds cover a broad range of sonic characteristics. For example, the frequency range of the mixed sounds typically will span the entire audible frequency range. One significance of this is that these systems require, for reproduction, a loudspeaker that can reproduce this broad range of frequencies. This inhibits the ability to customize a loud speaker for a particular frequency range as can be done in the claimed invention. Also, these mixed signals suffer from the mixing and loud speaker masking problems addressed in the background of the invention. Similar comments apply to customized amplifiers. Despite all these stark differences, the Examiner relies extensively on prior art that relates to spatial separation systems. In essence, the Examiner asserts that anything with channels is relevant and analogous. As demonstrated above, this is legally wrong and impermissibly disregards the invention as a whole.

For at least some claims, another very important factor in considering the invention as a whole is the dynamic control means. Again the Examiner paints a rejection with broad brush strokes and misses some very significant points. The Examiner uses hindsight to pick and chose *elements* from the prior art that somehow arguably relate to controlling audio signals. But the Examiner disregards the significance of the specific recitations of the claims as a whole. For example, with respect to some of the claims, the dynamic control means is used to individually control customized loudspeaker networks and amplifier networks. Putting aside the Examiner's erroneous definition of "network", the Examiner ignores the significance of this in the context of the claimed invention as a whole. The dynamic control can be used to control

¹ This includes at least the Odom, Camras, and Ariga references.

the overall network and individual components within the network. This enables, for example, the ability to turn on/off certain sound sources during playback or to change the relative amplitude of the sounds from one channel with respect to another. These capabilities enable certain sound sources to be selectively omitted during playback and/or to make one or more sounds (e.g., relating to one or more instruments) to be played back more loudly than others. The dynamic controller enables dynamic, automatic and simultaneous control over the individual elements as the music is played back. Nothing in the prior art comes close to this.

The Examiner admits that Phinney does not disclose a dynamic controller. Yet, the references the Examiner relies on for the dynamic control do not disclose this either. Odom relates to audio *set up* parameters in a MIDI system. Odom does not disclose controlling amplifier networks or loudspeaker networks in the way and for the purpose claimed. Because Odom deals with set up parameters, it is clear that it does not relate to dynamic control during playback as claimed. Nor is it "simultaneous" as explained in the Appeal Brief. It is clearly sequential control. This too the Examiner admits, but attempts to sidestep.

The dynamic control can also relate to the customization, which the Examiner overlooks. For example, on a particular channel a plurality of amplifier elements may be used and be customized based on the types of sounds that are to be played back over that channel. For example, rather than having a single amplifier that spans the range of amplification, the multiple elements for that one channel can be selectively, automatically and dynamically turned on and off as needed during playback to avoid maxing out the range of the amplifier. This ability to turn on and off (or otherwise control) individual amplifier elements within a single channel (for separate sound sources) is no where disclosed in any of the prior art. Yet, this provides some very unique capabilities. The Examiner just sweeps this limitation under the carpet, alleging that the control in Edwards meets this. Yet, Edwards is simply a band pass filter. As such it is focused on frequency bands of mixed signals, not separate control of sounds from separate sound sources.

The Examiner relies on numerous prior art references that span a century. Many are cited for individual elements. Yet, none comes close to putting together the overall combination of elements recited or simultaneously addressing the problems addressed by the invention. The Examiner alleges that various ones of the cited references individually address one of the problems addressed by the prior art. Yet, none simultaneously address the combinations of problems addressed by the claimed invention. The Examiner alleges that there is a suggestion to combine the disparate references. Yet, there is no evidence cited in support thereof.

These are but a few examples of where the Examiner has failed to consider the claimed invention as a whole. Many of the errors are replicated throughout the rejection and woven throughout the Examiner's Answer. Many of the errors have been addressed in the Appeal Brief. The comments below focus on the Examiner's new positions, new interpretations and new comments.

B. Reply to Specific Issues

1. Separate Sound Sources

At pages 3-4, the Examiner alleges that Claim 1 recites broad limitations. This is evidence that the Examiner is prejudging the claim because claims as a whole are only too broad if they read on the prior art. Here, the Examiner has demonstrated that he has formed an opinion without regard to the art and has tried to justify that conclusion. In doing so, the Examiner now, for the first time, is trying to reinterpret the claim element relating to "means for separately receiving sounds..." claim element. This interpretation is legal error.

Considering the claim as a whole, in light of the specification, it is clear that the claim element is not merely talking about spatial separation as the Examiner now tries to suggest. The claimed invention as a whole makes clear that sounds from sound sources are separately received, without mixing. This enables, for example, the use of amplifiers and/or loudspeakers customized for the sonic characteristics of the sound sources. According to the Examiner's interpretation, mere spatial separation of

microphones would suffice. This ignores the background of the invention that distinguishes over merely using spatial separation and ignores the other claim elements. For at least these reasons, this interpretation constitutes legal error.

It is clear that the Examiner is attempting to redefine the claim on appeal to compensate for the deficiencies in the references relied on. For example, the reinterpretation of the term "sound source" by the Examiner as spatially separate receptions of the same sounds would render claims drawn to customization based on sonic characteristics of the sounds produced by particular sound sources moot, since the only difference between the sound sources would be spatial separation. Such customization is included, for instance, in claims 56-62, 67, 68, 71, 74, 76, 77, 80-89, 93, 94, 97, 100, 102, 103, and 106.

2. Amplification Network

At page 4, the Examiner misinterprets the word network in an attempt to remedy deficiencies in the prior art. The Examiner commits legal error by selecting a "convenient" definition without considering the claimed invention as a whole, or the context of the term in light of the specification. This too is legal error. The Examiner improperly attempts to read various limitations out of the claims through this definitional sleight of hand.

For example, the Examiner ignores the express teachings of the patent that refer to each channel having amplifier means being capable of having multiple amplifier elements under common control and that the collection of these amplifier means are also under common control. This enables custom control for a given channel (micro control) as well as relative control between channels to permit control for the overall system (macro control). The prior art is devoid of this teaching in the context of the claimed invention as a whole. The Examiner apparently recognizes this, and thus resorts to redefinition of the term "network". For at least these reasons, this interpretation constitutes legal error.

The Examiner is similarly creative in interpreting the word "element" to include sections of an amplification circuit that are designed to amplify only a particular frequency control band. The Examiner has applied a broad reinterpretation of the term "amplifier element" in order to support the spurious allegation that mere amplifier components may be construed as amplifier elements.

The Examiner ignores the express teachings of the patent that refer to each channel having amplifier means being capable of having multiple amplifier elements under common control and that the collection of these amplifier means are also under common control. See, for example, claims 72, 75-80, 95, 98, and 101-106. This enables custom control for a given channel as well as for the overall system. The prior art is devoid of this teaching in the context of the claimed invention as a whole. The Examiner apparently recognizes this, and thus resorts to redefinition of the terms "network" and "element". For at least these reasons, these interpretations constitute legal error.

3. <u>Loudspeaker Network</u>

The Examiner asserts that Herleman discloses customization of loudspeaker means based on one or more sonic characteristics of the sounds corresponding to audio signals on its path. Answer at pages 32 and 33. In doing so, the Examiner misinterprets the disclosure of Herleman. Herleman describes a horn speaker for use in musical performances to provide a solo effect to a mixed sound signal. Herleman at col. 1, lines 35-39. Even if the horn speaker described in Herleman produces sounds with distinctive sonic characteristics, Herleman does not suggest that it should be used to reproduce sounds from a sound source that originally included the same sonic qualities. Rather, it is from a mixed signal.

The Examiner further alleges that Herleman suggests the desirability of customizing each of a plurality of loudspeaker means. However, Herleman discloses that a single horn speaker should be included with a speaker designed to uniformly respond to any incoming audio signals. Id. at col. 2, lines 14-16. In light of this teaching

of Herleman, the Examiner's position that customization of each of a plurality of loudspeaker means is taught is untenable.

The customization of each of a plurality of loudspeaker means is included, for example, in claims 56-62, 82-89, and 106.

The Examiner has failed to address with any specificity the claim limitation that at least one loudspeaker means includes two or more loudspeaker elements. The inclusion of two or more loudspeaker elements in a loudspeaker element may enhance customization of the loudspeaker elements. Claims 86-89 include similar limitations.

4. Dynamic Control

At page 5, the Examiner alleges that the loudspeakers of Phinney are under common control of the sound records. The Examiner confuses the content (i.e. the sounds recorded on the record) with the control elements. The Examiner alleges that the records in Phinney are the storage means. The Examiner also alleges that the records (or the audio signals stored thereon) are the control means. This is legal error and ignores the claimed invention as whole. In the claimed invention, audio signals are stored on a storage means and the audio signals are passed through the amplifier and loudspeakers. However, there is a separate control means for controlling the amplifier network and the loudspeaker network and the various elements thereof. For example, dependent claims 63, 67, 89 and 95 specifically recite that the loudspeaker elements are controlled by the "dynamic control means". This element is not satisfied by the audio signals on a record. Claim 30 recites dynamically controlling "each of the audio signals." This differs from what is in claim 1, yet the Examiner does not address this. The Examiner ignores this aspect of the claims and the significance of this in the context of the claimed invention as a whole. The fact that the Examiner must stretch the

The specification at p.14, for example, makes clear that the amplifier systems and loudspeaker systems are separately controllable, in part, so that "the audio signals sent over each signal path can be controlled individually..." The specification goes on to state that "each of the amplifiers (A-N) and each of the individual loudspeakers are each separately controllable." The Examiner's arguments ignore the clear meaning of the claim language and the claimed invention as whole.

references by calling Phinney's record the storage means and the control means further evidences the deficiencies in the references.

C. Non-analogous Art

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The Examiner's comments regarding what constitutes analogous art are both legally and factually flawed. It is the Examiner's burden to establish a *prima facie* case of obviousness and this includes establishing that the references relied on constitute analogous art. See *In re Clay*, 966 F.2d 656 (Fed. Cir. 1992) and *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 864 (Fed. Cir. 1992).

The Examiner's assertion that the field of the invention is simply "recording and/or reproduction of sound" is wrong as a matter of fact and law. Answer at p. 22. The Examiner cites no evidence to support this assertion. The case law is replete with examples like this where an attempt to broadly characterize a field of invention was found erroneous. For example, the Federal Circuit confirmed that the art of petroleum extraction is not analogous to the art of petroleum storage despite both being in the petroleum industry. *In re Clay*, 966 F.2d 656, 659-60 (Fed. Cir. 1992). Fasteners for garments are not analogous to fasteners for a hose clamp. *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992). Paper stapling is not analogous to surgical stapling. *U.S. Surgical Corp. v. Hospital Prods. Int'l Pty., Ltd.*, 701 F. Supp. 314, 334 (D. Conn. 1988). Single in-line memory modules (SIMMs) for an industrial controller are not analogous to SIMMs for personal computers. *Wang Labs., Inc. v. Toshiba Corp.*, 993 F.2d 858, 864 (Fed. Cir. 1992). Railway car brakes are not analogous to automotive vehicle brakes. *SAB Industri AB v. The Bendix Corp.*, 199 USPQ 95, (E.D. Va. 1978).

These errors are carried through to the second part of the test where the Examiner incorrectly characterizes the problems with which the inventor was involved. With respect to the problems, the Examiner fails to appreciate the combinations of problems addressed by the claims, as set forth above.

1. <u>Odom</u>

The Examiner alleges "... a control device that controls parameters in multiple audio channels falls within the field of endeavor of the claimed invention." Answer at p. 22. This clearly disregards the well established precedent and reflects a major flaw in a fundamental basis for the rejection. It further reflects the fact that the Examiner is simply looking at pieces of the claim individually and not considering the invention as a whole, and the overall purpose and advantages of the claimed invention as a whole. Unlike Odom, the invention does not relate to set-up parameters in a MIDI system.

2. Herleman

The Examiner reiterates the erroneous assertion regarding the field of endeavor. However, in connection with this reference, the Examiner alleges that a "horn speaker" is in the same field of endeavor. Answer at p. 25 and 26. This is even a further stretch. Clearly, the invention relates to an overall system as detailed in the Appeal Brief. Simply alleging that a horn speaker is the relevant field of endeavor is legal error. Under the correct analysis, Herleman does not relate to the relevant field of endeavor.

Similarly, the assertion that the problem of Herleman is the same as one of those addressed by the invention is legally wrong. The Examiner erroneously implies that Herleman relates to deficiencies that exist in the design concept of universal loudspeakers. Answer at p. 26. The Examiner supports this characterization with the claim that Herleman teaches that a specialized loudspeaker can better reproduce the sound of a specific instrument or class of instruments. *Id.*

The disclosure of Herleman does not support this. Instead, Herleman suggests that the field of invention is producing an auxiliary sound emanating means for producing solo effects during a performance of music. Herleman at col. 1, lines 35-38. Herleman does not suggest providing the horn speaker to better reproduce a recorded sound, but to simply set the sound apart from other sounds being generated during a musical performance. But the signal passed through the horn speaker is a mixed signal. This in no way relates to the problems addressed by the claimed invention.

Edwards

The Examiner does not dispute that Edwards is merely an equalizer that equalizes different frequency bands. The Examiner does not even allege that Edwards relates to control over sounds from separate sound sources, nor does the Examiner even allege that the invention relates to frequency equalization. Yet, the Examiner, without evidence or support, claims that Edwards is in the same field of endeavor. This is without legal merit.

The Examiner cites to the Background of the Invention, which talks about one of the problems that the invention addresses (avoiding superimposed sounds from different sound sources), as evidence that Edwards relates to the solution set forth by the invention. To the contrary, Edwards relates to the problem, not the solution. This is another example of how the Examiner simply picks and chooses words in the specification and/or prior art without considering the significance of those words to the overall context.

Even the Examiner does not contest that Edwards relates to superimposed signals from different sound sources. Edwards provides equalization of the bands of frequencies from the mixed signals. In contrast, the invention avoids mixing in the first place. Edwards in no way relates to what the invention is. Rather, it is premised on an approach that the invention avoids.

The Examiner offers no legal justification for the novel proposition that if a prior art reference suffers from a problem avoided by the invention, that somehow it becomes relevant to the field of the invention.

4. Camras

Simply put, the Examiner does not dispute that Camras relates to spatial separation. The invention identifies the problems with spatial separation of mixed signals and avoids them. Camras is not within the field of endeavor nor does it address the relevant problems.

5. Ariga

The Examiner erroneously alleges that any "apparatus for reproducing music...is in the same field of endeavor..." This is legally incorrect. It is telling that the Examiner avoids addressing the specifics of Ariga and rather attempts to use broad brush strokes to allege that Ariga relates to "reproducing music". Answer at p. 29. The Examiner does not dispute that Ariga relates to a spatial separation system with mixed audio signals played through left and right channels. For reasons previously presented, spatial separation systems are part of the problem avoided by the invention. They are not part of the solution or within the relevant field of endeavor. To the extent that Ariga addresses masking, it is not avoided as in the present invention.

6. de Koning

The Examiner erroneously alleges that "an apparatus for efficient[sic] driving a plurality of loudspeakers from a plurality of signal sources... is in the same field of endeavor as the claimed invention." *Emphasis added*. This is incorrect. The invention does not relate to power efficiency, but improved sound quality. In fact, some embodiments of the invention may be less efficient from a power perspective. In any event, the Examiner does not even allege that de Koning in any way relates to improved sound quality. Thus, the rejection is devoid of any evidence that de Koning is in the field of endeavor or addresses the problems with which the inventor was involved.

Simply put, the Examiner consistently commits legal error by mischaracterizing the field of endeavor and ignoring the collection of problems addressed by the claimed invention.

Whatever the precise definition of the field of endeavor is, clearly it does not relate to sounds systems that use spatial separation of mixed signals. Thus, the Examiner's assertion that any recording and/or reproduction system is relevant is untenable. Numerous cases, including the Federal Circuit cases cited above, make clear that this is legal error.

D. No Suggestion to Combine

Another clear legal error is the alleged basis for there being a suggestion to combine the disparate references.

1. Phinney in view of Odom

Beginning at p. 23, the Examiner alleges that there is a suggestion to combine Phinney and Odom. The Examiner is, at best, stretching Phinney to say it relates to motion pictures. At best, the cited portion of Phinney discusses projecting a motion picture of the orchestra. This is ancillary to the main sound system of Phinney. Nevertheless, the Examiner engages in a leap of logic by alleging that because motion pictures are projected in theatres with varying configurations and acoustic characteristics, it would have been obvious to apply automatic individual control of audio channel volume as taught by Odom to the recording and reproducing system taught by Phinney for the purposes of rapidly adapting the system to different locations and providing a convenient way to save and reapply previously saved parameters for a particular location." Answer at p. 23.

This theory, while quite interesting, is legally devoid of legal merit for numerous reasons. The Examiner erroneously extrapolates that the ancillary disclosure of the use of a motion picture with the audio system of Phinney in some way means that there is a suggestion to combine Phinney with Odom. This is not true. Such "logic" ignores the proper legal test. Phinney in no way relates to saved audio parameters for a particular location. So there is no reason to use the "set up parameters" of Odom in Phinney. Moreover, to the extent the "motion picture" aspects of Phinney allegedly relate to set up parameters of Odom, then the suggestion would be to modify aspects of the motion picture portion of the Phinney disclosure. There is no reason given for modifying the audio portion of the Phinney system in light of Odom and this "alleged" suggestion. Moreover, Odom relates to a MIDI system. And even if the teachings of Odom were applied to Phinney, the combination is still deficient because the set up parameters in Odom are static for a given location. They do not provide dynamic control of the amplifiers and loudspeakers during playback.

In short, it is an extreme stretch of the references and a large leap of logic to argue that there is a suggestion to combine these references due to the ancillary disclosure of a motion picture (separate and apart from the sound system) in Phinney in light of the saved set up parameters in a MIDI type system of Odom. Under the proper legal test, the requisite suggestion to combine is simply missing here.

2. Phinney and Odom in view of Herleman

Herleman clearly relates to isolating a frequency range from a mixed signal. The switching is simply on/off of a single pole single throw switch. Therefore, either the entire mixed signal is passed through the universal speaker (which typifies the prior art and problems associated therewith) or the mixed signal is passed through a horn speaker. But it is still a mixed signal. No suggestion is made to separately store and pass sound from a real horn through this speaker. Nor is there any suggestion to do this with multiple different speakers or even how this would work. Yet, the Examiner ignores this. The Examiner also ignores that the signal passed is a mixed signal. A proper objective analysis must consider the reference as a whole. This the Examiner has not done.

While these deficiencies are true for all of the claims, they are particularly acute with respect to claims that recite multiple speaker elements. This includes, for example, claims 86-89. Herleman does not disclose or suggest multiple speaker elements in one channel.

The Examiner alleges that there is a suggestion to combine Herleman with Phinney and Odom to better reproduce the sound of a specific instrument or class of instrument. Answer at 26. But Herleman does not disclose a loudspeaker for better reproducing a recorded sound of a particular instrument. Instead, Herleman discloses a loudspeaker that provides a solo effect to a sound signal during a musical performance. Herleman at col. 1, lines 35-38 and col. 4, lines 26-34. In other words, the loudspeaker of Herleman is not described for reproducing sounds previously recorded by a certain instrument or class of instruments to enhance the sound quality of the reproduced recording. Herleman is directed to setting a sound signal apart from other sound

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signals produced on other speakers in circumstances where the sound signals are subject to similar levels of amplification. *Id.* at col. 1, lines 19-22. Therefore, combination of Herleman with Phinney and Odom constitutes legal error.

3. Phinney and Odom in view of Edwards

The Examiner alleges that Edwards provides motivation to employ the equalizer disclosed in Edwards into any audio system having a signal gain. However, the equalizer of Edwards is configured to provide precise frequency correction across a plurality of frequency bands. However, in a system wherein each audio signal corresponds to a single sound source, such correction is largely irrelevant. Therefore, there would be no motivation for using the multiple band equalizer disclosed by Edwards in Phinney or Edwards.

The Examiner's motivation for combining Edwards with Phinney and Odom is clearly based on impermissible hindsight.

4. Phinney and Odom in view of Camras

The Examiner alleges that Camras teaches combining sound patterns received by different microphones and recorded on separate channels for connection to a single loudspeaker. Answer at page 28. The Examiner asserts that Camras suggests modification of Phinney and Odom to include this feature in order to achieve a more economical playback system. *Id.* This argument fails because the Examiner has mischaracterized the disclosure of Camras and acknowledged that Camras seeks a different goal than the invention.

The Examiner has mischaracterized Camras in that Camras teaches combining spatially separated sound patterns received by different microphones and recorded on different channels for connection to a single loudspeaker based on their spatial separation. Camras at col. 6, lines 49-55. Therefore, Camras would have provided no motivation for combining separately recorded sounds produced by separate sound sources. Moreover, economical playback is not the goal. Better sound quality is.

5. Phinney and Odom in view of Ariga

The Examiner alleges that Ariga discloses an acoustic apparatus in which low frequency sounds from separate channels are mixed together during playback and passed through a common loudspeaker to reduce cost. Answer at page 29. Again, this relates to mixed signals and cost reduction is not the goal.

Clearly, the Examiner has applied hindsight to combine disparate references, and pick and choose discrete elements therefrom, in light of the claimed invention.

6. Phinney and Odom in view of de Koning

At page 31, the Examiner alleges that de Koning provides motivation for combination with Phinney and Odom in order to reduce power required for amplification. Neither Phinney nor Odom relate to producing a more power efficient system. Hence, the Examiner's motivation for combining de Koning with Phinney and Odom is without merit.

E. Conclusion

For at least the foregoing reasons, complete reversal of all grounds of rejection is requested so the case can finally pass to issue. All of the claims are in condition for allowance. Notification of such is earnestly solicited.

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Respectfully submitted,

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